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A hardware/software co-simulation environment for micro design with HDL simulator and OS interface

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Abstract

Proposes a hardware/software co-simulation environment using an RTL (register transfer language) interface. The proposed simulation environment introduces the "operating system interface" (OSIF), which invokes system calls in the OS on the simulation platform to execute software. The OSIF consists of data adaption facility and function correspondence management. It cooperates with the OS of the simulation platform. We show the results of experiments with a compatible processor model. This environment verified our processor model with SPEC benchmarks. It requires various OS services. For example, with the Lisp interpreter program Ii, our detailed experiments with the core part of R3000 was simulated only within 20 hours on a 109 MIPS workstation.

Index Terms

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Controlled Indexing

LISP application program interfaces hardware description languages logic CA microprocessor chips operating systems (computers) performance evaluation interpreters virtual machines

Non-controlled Indexing

109 MIPS 20 hour HDL simulator Lisp interpreter OSIF R3000-compatible processor model RTL simulator SPEC benchmarks application software data adaption function correspondence management hardware description language simulator hardware/software cosimulation environment Ii interpreter program microprocessor operating system interface register transfer level simulator simulation platform language interface system call invocation workstation

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References

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